PLANETARY PHENOMENA FOR MARCH AND APRIL, 1917.

By Malcolm McNeill.

PHASES OF THE MOON, PACIFIC TIME.

Full Moon...	Mar.	8th,	$1^h\ 58^m$	P.M.	Full Moon...	Apr. 7th,	$5^h\ 49^m$ A.M.
Last Quarter.	"	16th,	4 33	A.M.	Last Quarter.	" 14th,	12 12 P.M.
New Moon...	"	22d,	8 5	P.M.	New Moon...	" 21st,	6 1 A.M.
First Quarter.	"	30th,	2 36	A.M.	First Quarter.	" 28th,	9 22 P.M.

The Sun crosses the equator from south to north on March 20th, $8^h\ 38^m$ P. M., Pacific Time.

Mercury at the beginning of March is a morning star rising less than an hour before the Sun, and therefore is too near that body for naked-eye view. The two bodies gradually approach each other and come to conjunction on March 29th. The planet then becomes an evening star and remains so until it reaches inferior conjunction on May 16th. The distance of the planet from the Sun gradually increases until it comes to greatest east elongation on April 24th. By the end of the month it is well on its way to inferior conjunction. The latter half of April affords the best time of year for naked-eye view of *Mercury*, as the planet remains above the horizon rather more than an hour and one-half after sunset, and is rather a conspicuous object in the evening twilight. Toward the end of April it is very near the *Pleiades* group in *Taurus*. The stars in the group are not very bright, but in a clear atmosphere they can probably be seen low down near the western horizon about an hour after sunset. *Mercury* is in conjunction with *Uranus* on March 2d, with *Venus* on March 18th, with *Mars* on March 23d, and with *Jupiter* on April 16th. The last of these is the only one which can be easily seen without telescopic aid. *Mercury* does not set on that date until after 8 P. M. and may be seen about 3° north of *Jupiter*, and for a day or two before and after that date the two planets will not be far apart.

On March 1st *Venus* is a morning star rising about thirty minutes before sunrise, too near the Sun to be easily seen. Both planet and Sun are moving eastward among the stars,

but the planet's motion is a little faster than that of the Sun and superior conjunction is reached on April 25th. The planet then becomes an evening star and remains so until the following spring. *Venus* is in aphelion on March 3d; but its orbit is very nearly circular, and its variation of distance from the Sun is very small as compared to that of *Mercury* or *Mars;* so that there is not much difference of brightness between different elongations. Of course at superior conjunction, when it is at its greatest distance from the Earth, its brightness is only a small fraction of its brightness when near inferior conjunction, but it is still a conspicuous object unless too near the Sun.

Mars passed conjunction with the Sun and became a morning star on February 28th, but does not get far enough away from the Sun for naked-eye view until near the end of May. At the end of April it rises only about half an hour before sunrise. As it is, when at conjunction, at its maximum distance from the Earth it is therefore at its minimum brightness, about the same magnitude as the pole star. It will not be a conspicuous object throughout the rest of the year. By the end of the year it will be about as bright as the average first-magnitude star. One rather unusual circumstance may be mentioned, altho it is not an observable phenomenon. From January 1st to May 1st its time of setting varies only four minutes. Of course after conjunction it sets before sunset and can not be seen at setting, even with a good telescope. The cause of the phenomenon is that before conjunction *Mars* is north of the Sun, and after conjunction the Sun is north of Mars.

Jupiter is still an evening star, conspicuous in the western sky, but toward the end of April is well on its way toward conjunction with the Sun, setting on April 30th only half an hour after sunset. Its great brightness permits it to be seen when at a comparatively short distance from the Sun, but it will not be an easy object to observe during the last few days of the month. During March and April it moves about 13° eastward and 4° northward thru a barren part of the constellation *Aries* and nearly reaches *Taurus* by the end of the period. During the latter half of April, *Jupiter* and *Mercury*

are not far apart. Their conjunction has already been mentioned.

Saturn is still in fine position for evening observation, being on the meridian about 20° degrees south of the zenith at 9 P. M. on March 1st. This time of meridian transit comes four minutes earlier each day, so that by the end of April it comes some time before sunset, but the planet will not set until after midnight on April 30th. *Saturn* is in the constellation *Gemini* and up to March 25th it retrogrades or moves westward not quite 1°. It then resumes its direct or eastward motion, and by the end of April its position among the stars is very close to that which it held during the middle of February. It is still nearly on the extension of the line from *Castor* to *Pollux,* distant from the latter about once and one-half the distance between the stars.

Uranus is a morning object, having passed conjunction on February 8th, but it is hardly far enough away from the Sun to be seen until after April 1st. By the end of April it rises at about 2 A. M. It is in the eastern part of the constellation *Capricorn* and moves about 3° eastward and northward during the two months.

Neptune is on the meridian at a little before 10 P. M. on March 1st and before 6 P. M. on April 30th. It is in the constellation *Cancer,* about 9° east of *Saturn.*